5.9 Noise

Noise is defined technically as sound that is unwanted and perceived as a nuisance by humans. Within the context of this HSW EIS, the public represents human habitations located adjacent to the boundary of the Hanford Site and communities bordering roads that may support material and waste shipments to and from the site. An understanding of noise impacts is facilitated by associating noise levels with common activities or sources (see Figure 5.32).

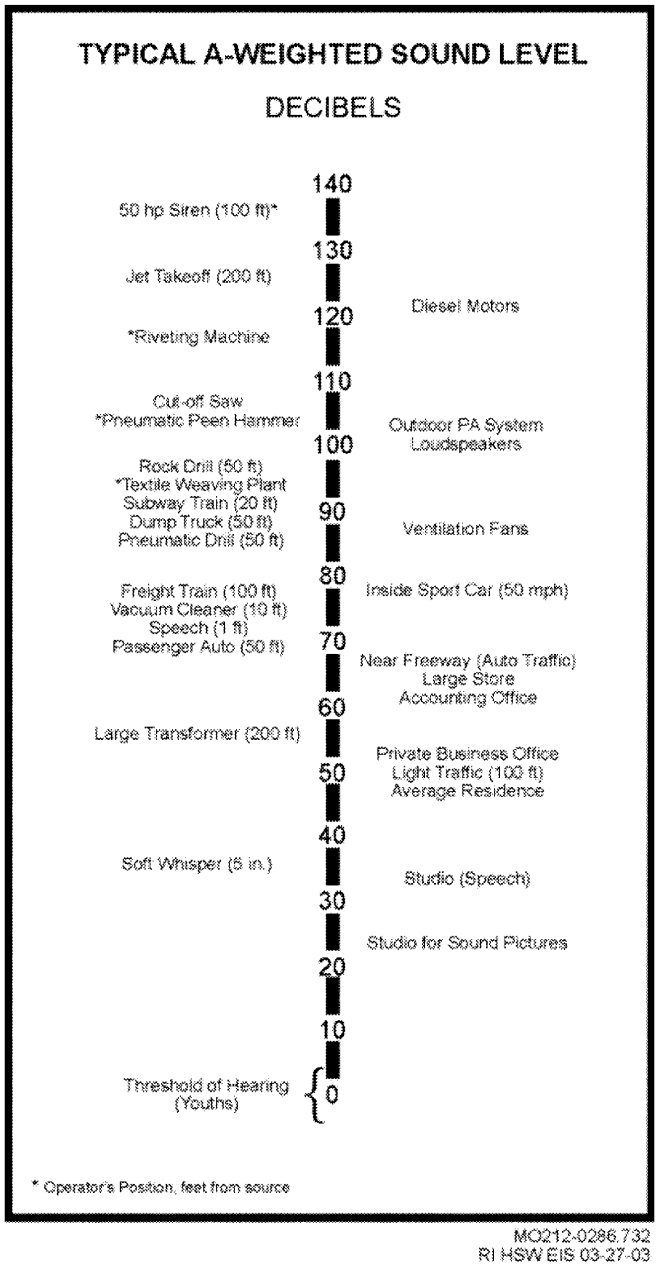

Figure 5.32. Association of Noise Levels with Common Sources or Activities

Potential impacts of noise on the public from implementing the alternative groups are addressed in the following sections. The analytical methods used to arrive at the conclusions drawn in this section are presented in Volume II, Appendix J.

In the course of implementing any of the alternative groups, various waste management construction and operations activities would generate noise. The total work force associated with the alternative groups likely would not exceed 850, which would result in a minimal addition to traffic noise.

For protection of the public, Washington Administrative Code (WAC) 173-60 has established a limit for daytime residential noise levels of 70 decibels (dBA) and a nighttime limit of 50 dBA at industrial site boundaries. No actual human habitations would be located within 10 km (6.2 mi) of the boundary of the Industrial-Exclusive zone surrounding the 200 Areas or the Area C borrow pit south of SR 240, thus ensuring that WAC limits would not be exceeded.

The point of closest potential exposure to noise for the transient public near the 200 Areas is about 2 km (1.2 mi) distant on SR 240. However, only emergency turnouts exist on SR 240 in that vicinity, and any exposure to noise would be of short duration and below applicable standards.

Noise is defined in terms of human perception, but sound also can be disturbing to wildlife. Because wildlife can relocate freely to areas of less sound intrusion, no substantial adverse sound-based impacts from waste management activities are anticipated.

Although not considered noise in the above sense, a potential might exist for impacts from ground vibrations on research conducted at the Laser Interferometer Gravitational Wave Observatory (LIGO). The major source of such ground vibrations would be associated with excavation for capping materials in Area C where the closest distance to one of the LIGO detection arms is approximately 14 km (8.7 mi). The impacts, if any, would be similar for any of the alternative groups; however, these impacts have not been quantified.

5.9.1 Alternative Group A

The principal activities associated with Alternative Group A (for the Hanford Only, Lower Bound, or Upper Bound waste volumes) would be modification of the T Plant Complex; construction of deeper and wider trenches; loading, backfilling, and closure of the LLBGs; operation of the WRAP, T Plant, and CWC; operation of pulse driers for MLLW leachate; onsite transport of construction materials and waste; transport of MLLW offsite for treatment; disposal of ILAW in a new disposal facility near the PUREX Plant; and transport of construction materials to the site. Noise emissions from construction equipment range from 75 to 89 dBA (see Table 5.31). Because of the distance from the sources of noise from these activities, noise levels would be less than applicable state standards at the nearest residence. The maximum calculated noise level at the nearest residence is 33 dBA, and this would be indistinguishable from background noise. Infrequent blasting of rock from the Area C borrow pit would not exceed applicable state standards at the nearest residence.

Table 5.31. Typical Noise Levels Associated with Construction Equipment[(a)] and Blasting[(b)]

Equipment	Representative Noise Level (dBA) at 15 m (50 ft)
Backhoe	80
Grader	85
Loader	85
Roller	75
Bulldozer	85
Truck	88
Scraper	89
Blasting	94[(c)]

(a) FTA (1995).
(b) Jones and Stokes (2002).
(c) Noise level at 1200 m (4000 ft) is about 59 dBA.

Material for capping LLBGs at closure would be acquired from the Area C borrow pit and would result in higher, but localized, noise levels from use of heavy equipment. In the absence of prolonged presence of the public in the vicinity, these noise levels likely would not result in a noticeable impact. Because there are no residential areas in the vicinity, state standards for noise would not be exceeded.

Incremental noise in communities through which waste is transported daily would be negligible when compared with background highway noise. Similarly, transport of construction material to the site and onsite would not result in substantial increases in traffic noise.

5.9.2 Alternative Group B

The principal activities associated with Alternative Group B (for either the Lower Bound or Upper Bound waste volumes) would be construction and operation of a new waste processing facility; construction of the current design, rather than deeper and wider trenches (as in Alternative Group A); loading, backfilling, and closure of the LLBGs; operation of the WRAP, T Plant Complex, and CWC; operation of pulse driers for MLLW leachate beginning in 2026; onsite transport of construction materials and waste; transport of MLLW offsite for treatment; disposal of ILAW in multiple, lined trenches in the 200 West Area; and transport of construction materials to the site. As in the case of Alternative Group A, noise levels resulting from these activities would be less than applicable state standards at the nearest residence.

The volume of capping materials required in Alternative Group B would be the largest among the alternatives. Although the activities would extend over a longer period of time, they would result in noise impacts similar to those described for Alternative Group A.

5.9.3 Alternative Group C

Alternative Group C is very similar to Alternative Group A in terms of industrial activities and associated noise propagation. Noise levels associated with the implementation of this alternative group would be less than applicable state standards at the nearest residence. Moreover, noise levels would not differ substantially in magnitude or duration from those associated with Alternative Group A.

5.9.4 Alternative Groups D and E

Except for excavation of capping materials, activities associated with Alternative Groups D and E are very similar to those of Alternative Group A, with only minor differences in scope and location of waste disposal. Noise levels associated with the implementation of these alternative groups would be less than applicable state standards at the nearest residence. They also would not differ substantially in magnitude or duration from those associated with Alternative Group A.

The volume of capping materials is less than for Alternative Group A. Hence, noise impacts indicated for Alternative Groups D and E would occur over a shorter period of time.

5.9.5 No Action Alternative

The principal activities associated with the No Action Alternative would be the construction of 66 additional CWC buildings for storage of waste that cannot be certified for disposal; construction of additional LLW trenches of current design, loading, and backfilling; capping of two existing MLLW trenches; operation of the WRAP, T Plant Complex, and CWC; operation of pulse driers for MLLW leachate beginning in 2026; onsite transport of construction materials and waste; transport of MLLW offsite for treatment; disposal of ILAW as glass cullet in vaults near the PUREX Plant; and transport of construction materials to the site. Again, noise levels resulting from these activities would be less than applicable state standards at the nearest residence.

Less than 25 percent of the volume of capping materials would be required to cap the MLLW trenches and the ILAW. The noise levels associated with extraction of these materials from the borrow pit would be similar to those for Alternative Group A, but the activities would occur over a much shorter time.